

Processing Report

Project name: Madrid2025_FB

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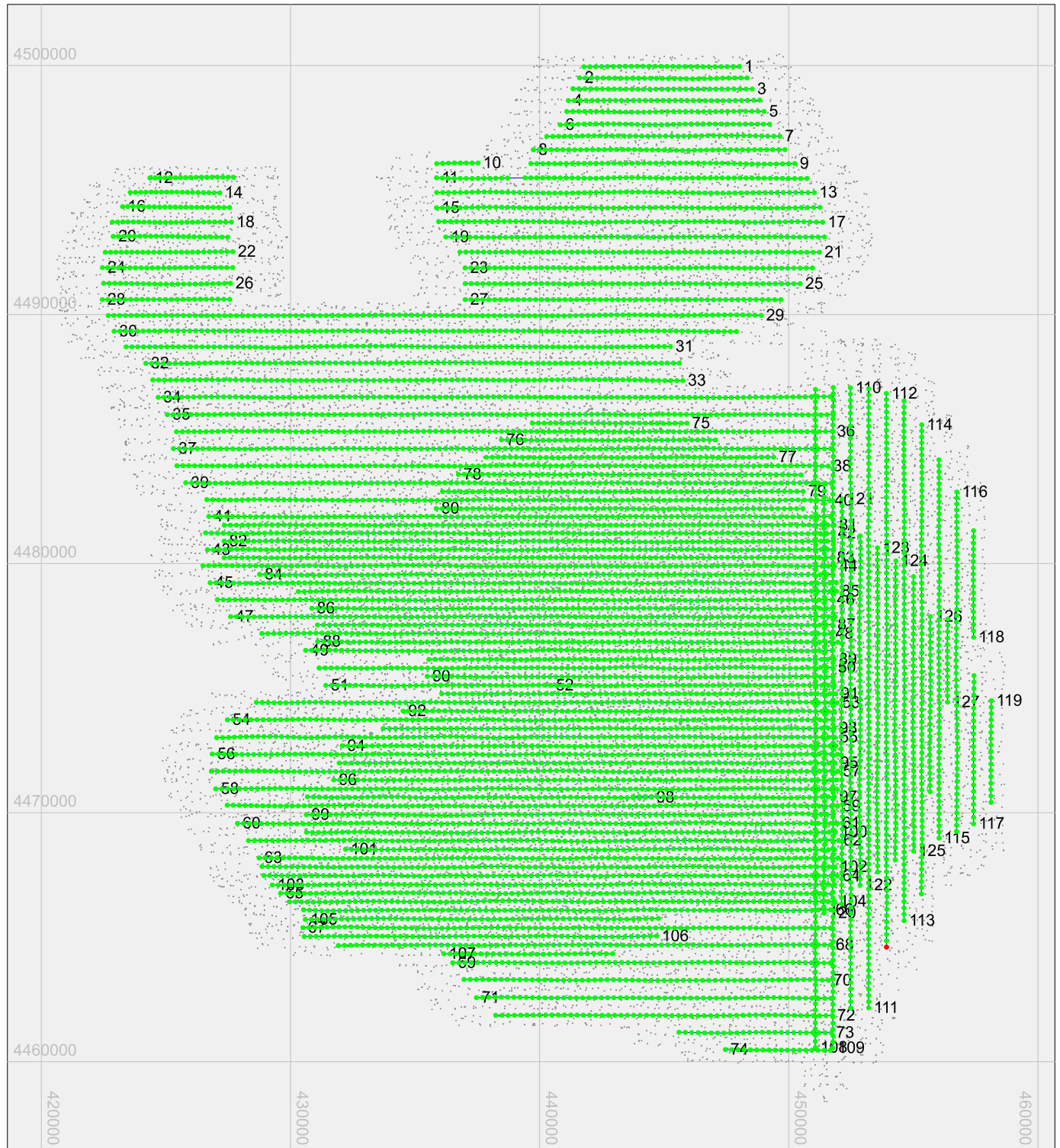
[Ground control points](#)

[Ground control point statistics](#)

General project information

Project name	Madrid2025_FB
Process	Geo-referencing
Computer node	RESTITUCION-1
Operating system	Microsoft Windows 10 Professional (build 26200), 64-bit, version 10.0
Machine	12th Gen Intel(R) Core(TM) i700K, 20 cores, 63.7 GByte RAM
Program version	13.2.0.10038
User name	Restitucion-1
Source time (*.sta)	Wed May 6 12:30:00 2026
Report time (*.pdf)	Wed May 6 12:58:07 2026
Project file	G:/Vuelos/Madrid_2025/Aero_Front-Back/Madrid2025_FB.prj
Statistic file	G:/Vuelos/Madrid_2025/Aero_Front-Back/Madrid2025_FB.sta
Active block	Complete
Number of used images	17525 of 17528
Number of used cameras	2 of 2
Number of strips	127
Flying height	min=2449.7 / avg=2521.4 / max=2595.0 [m]
Terrain height	min=488.4 / avg=658.1 / max=994.0 [m]
Average photo scale	1 : 15086
Coordinate system	PROJCS["UTM Zone 30 N", GEOGCS["ETRS89",DATUM["European Terrestrial Reference System 1989", SPHEROID["GRS 1980",6378137, 298.2572221011,AUTHORITY["EPSG","7019"]], TOWGS84[0,0,0,0,0,0,0], AUTHORITY["EPSG","6258"]], PRIMEM["Greenwich",0,AUTHORITY["EPSG", "8901"]], UNIT["Degree",0.01745329251994, AUTHORITY["EPSG","9102"]], AXIS["Long",EAST], AXIS["Lat",NORTH], AUTHORITY["EPSG","4258"]], PROJECTION["Transverse_Mercator"], PARAMETER["False_Easting",500000], PARAMETER["False_Northing",0], PARAMETER["Latitude_Of_Origin",0], PARAMETER["Central_Meridian",-3], PARAMETER["Scale_Factor",0.9996], UNIT["Meter",1,AUTHORITY["EPSG","9001"]], AXIS["East",EAST], AXIS["North",NORTH], AUTHORITY["EPSG","25830"]]

Flight overview



Graphic with 127 strip definitions for the aerial triangulation. The area has a planimetric extent of about: 42046 x 46056 [m].

● : Camera location for 17525 adjusted photos.

● : Camera location for 3 eliminated photos.

— : Defined strip in the project.

● : Tie point location for 181475 points.

Tie point distribution



Tie point distribution of 181475 points in the statistic file. The point size and colour reflects the number of images containing the point. The area has a planimetric extent of about: 42046 x 46056 [m] and a height range of about: 488 - 994 [m].

- : Point found in (0-13) images.
- : Point found in (14-26) images.
- : Point found in (27-39) images.
- : Point found in (>39) images.

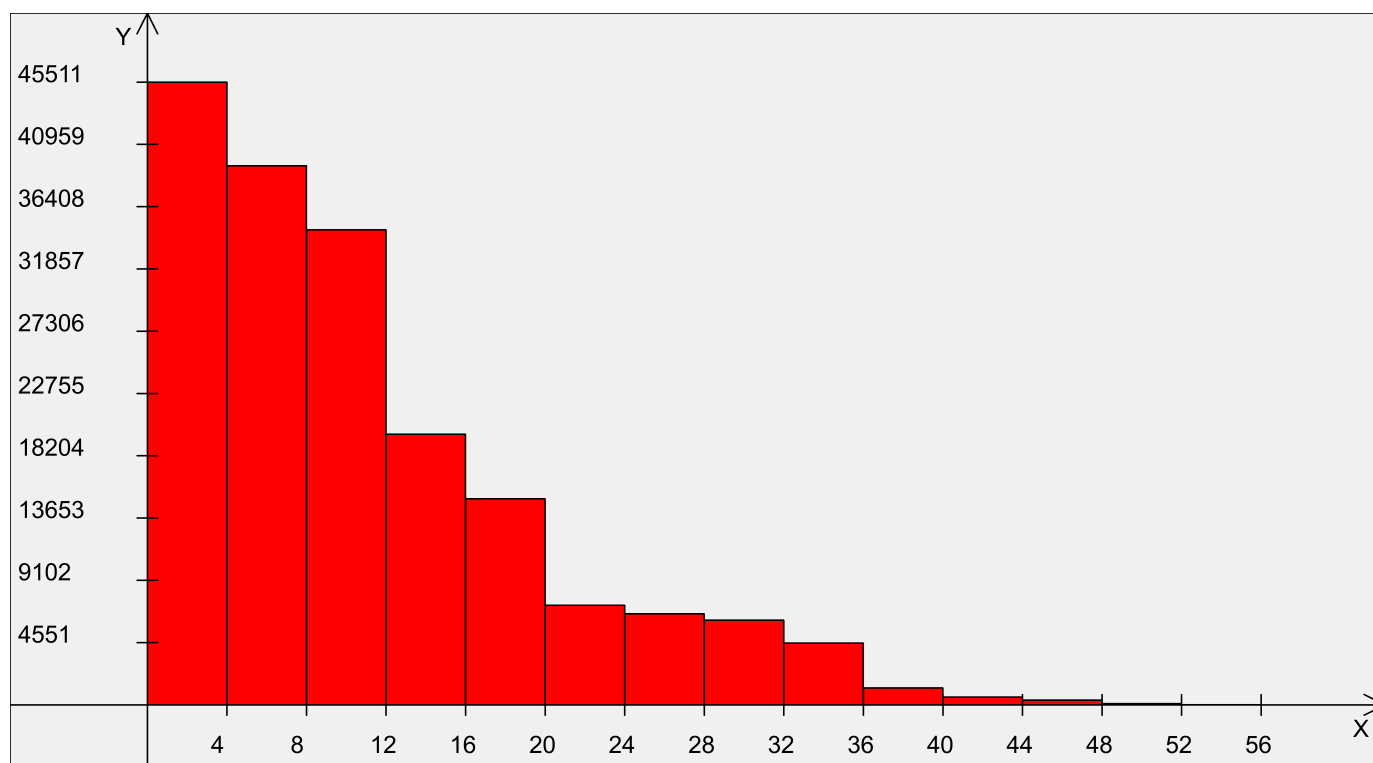
Image points

Frequency of image point observations in the photos

X	Number of image points (Y)	%
>0 - 4	45511	25.08
>4 - 8	39401	21.71
>8 - 12	34722	19.13
>12 - 16	19787	10.90
>16 - 20	15071	8.30
>20 - 24	7292	4.02
>24 - 28	6664	3.67
>28 - 32	6194	3.41
>32 - 36	4528	2.50
>36 - 40	1251	0.69
>40 - 44	583	0.32
>44 - 48	355	0.20
>48 - 52	104	0.06
>52 - 56	12	0.01

Appearance of 181475 image points from the statistic file. The table contains all image observations of the points.

Histogram for image point frequency in the photos



Graphic for 17525 photos and 181475 image points. Number of image points (Y) within a given range for number of photos (X).

Camera 0

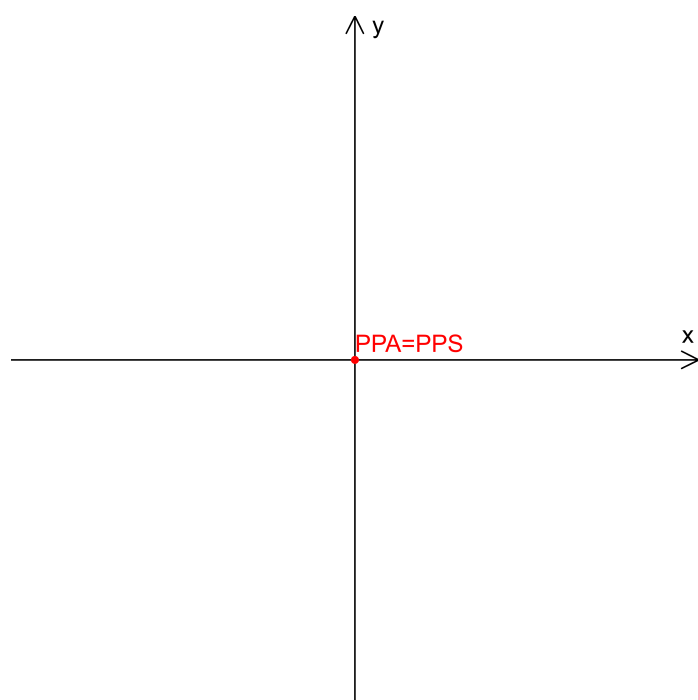
Camera data (Custom_back)

Data source	Madrid2025_FB.sta		
Sensor type	CCD sensor		
Manufacturer	Custom		
Model	Custom		
Serial number	not defined		
Camera UUID	not defined		
Sensor (width / height) [pixel]	14144	10560	
Pixel size (x / y) [micron]	3.7600	3.7600	
Ground sampling distance (x / y) [m]	0.0567	0.0567	
Calibration process	OFF		
Calibration status	Initial		
Calibration direction	INPHO (from ideal to measured)		
Distortion type	Undefined		
Additional parameters	OFF		
Focal length [mm / pixel]	123.3800	32813.8298	
Focal length (Fx / Fy) [pixel]	32813.8298	32813.8298	
Principal point (x / y) [mm pixel]	0.0000 7071.5000	0.0000 5279.5000	

Platform data (Custom_back)

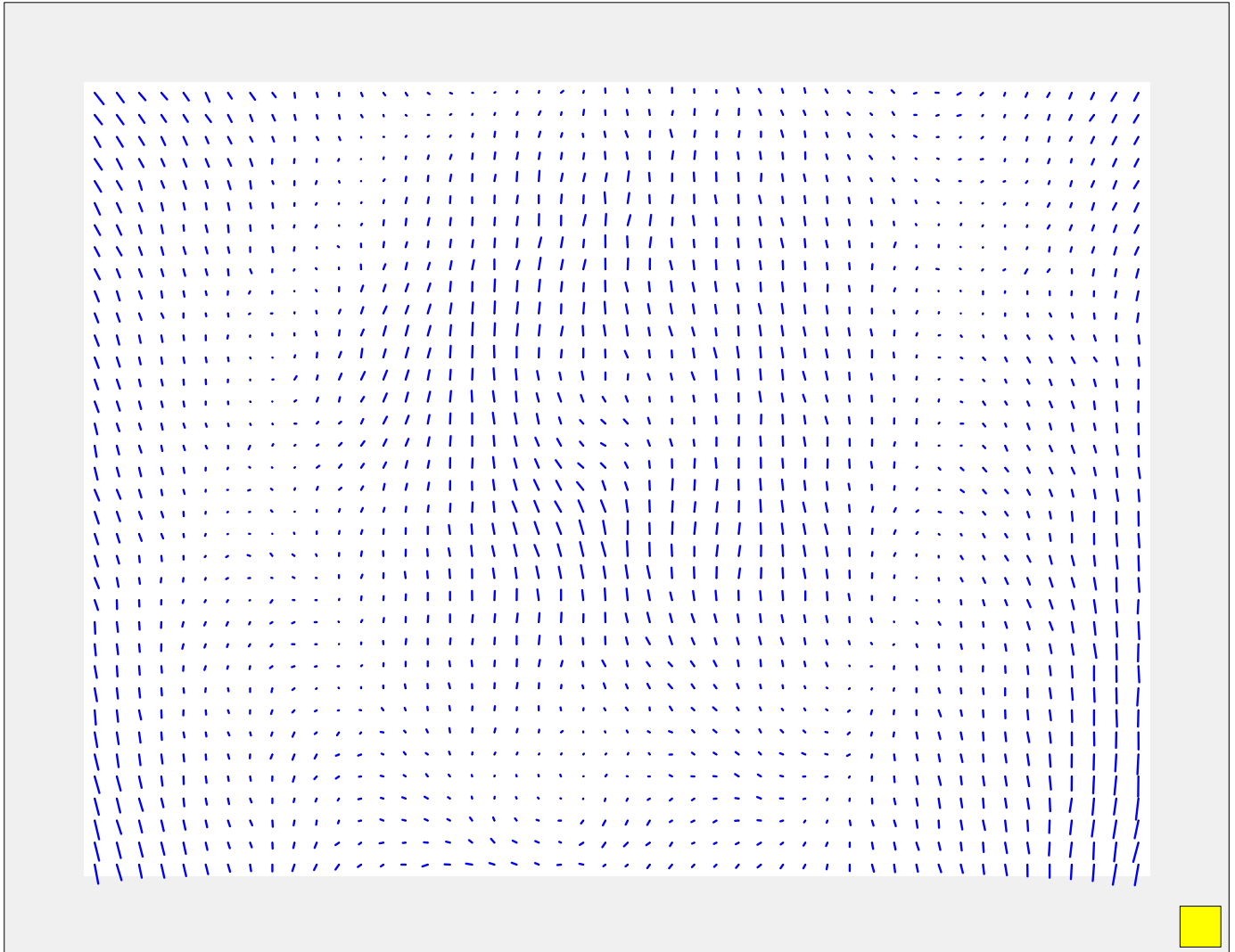
	X [m]	Y [m]	Z [m]
GNSS antenna offset	0.000000	0.000000	0.000000
	Omega (X) [deg]	Phi (Y) [deg]	Kappa (Z) [deg]
IMU boresight alignment	0.000000	0.000000	0.000000
Camera mount rotation	---		

Camera data (Custom_back)



Principle point ($x=0.0000$, $y=0.0000$ [mm]) in the image.

Image residuals (Custom_back)



Graphic of 989416 back-projected adjusted points from the statistic file. Average image residual matrix vectors (min=0.002, avg=0.157, max=0.522 [pixel]) for image matrix elements. An image matrix element is defined with about (300 x 300) pixels. Image residual is defined as: residual = observed - adjusted. Number of invalid image residual vectors outside the graphic: 0.

-  : Scale for the residual vectors. Symbol in the graphic is correlated to 1 [pixel] in the image.
-  : Average image residual vector for points in (0-2) images.
-  : Average image residual vector for points in (3-4) images.
-  : Average image residual vector for points in (5-10) images.
-  : Average image residual vector for points in (>10) images.

Exterior orientation evaluation (Custom_back)

ImageID	# of points	Distribution	RMS Ds [pixel]	Max Ds [pixel]	Remark
h50_0560_fot_508-20702_B	27	3 of 9	0.50	0.72	
h50_0559_fot_323-11112_B	36	3 of 9	0.49	1.43	
h50_0559_fot_504-20639_B	35	5 of 9	0.46	0.92	
h50_0559_fot_501-20500_B	46	5 of 9	0.46	0.88	
h50_0559_fot_323-11114_B	56	5 of 9	0.45	0.79	
h50_0559_fot_502-20522_B	32	4 of 9	0.45	0.92	
h50_0559_fot_502-20579_B	58	5 of 9	0.45	0.93	
h50_0559_fot_502-20521_B	45	4 of 9	0.45	0.81	
h50_0559_fot_505-20782_B	29	3 of 9	0.44	0.75	
h50_0559_fot_322-22736_B	70	5 of 9	0.44	0.86	
h50_0560_fot_508-20701_B	26	3 of 9	0.44	0.74	
h50_0582_fot_332-10325_B	49	5 of 9	0.44	0.90	
h50_0559_fot_505-20792_B	47	5 of 9	0.43	0.69	
h50_0559_fot_324-11002_B	63	5 of 9	0.43	0.77	
h50_0559_fot_323-11111_B	57	4 of 9	0.43	0.84	
h50_0559_fot_502-20581_B	48	5 of 9	0.43	0.79	
h50_0559_fot_315-22261_B	31	4 of 9	0.43	0.84	
h50_0534_fot_121-17167_B	75	5 of 9	0.43	0.86	
h50_0559_fot_501-20463_B	71	5 of 9	0.43	0.85	
h50_0559_fot_502-20553_B	56	5 of 9	0.43	0.79	
h50_0560_fot_508-20698_B	24	4 of 9	0.43	0.77	
h50_0559_fot_322-22753_B	57	5 of 9	0.42	0.76	
h50_0559_fot_323-11116_B	69	5 of 9	0.42	0.87	
h50_0559_fot_502-20580_B	46	5 of 9	0.42	0.95	
h50_0559_fot_505-20796_B	37	5 of 9	0.42	0.80	
h50_0534_fot_151-20093_B	77	4 of 9	0.42	0.94	
h50_0559_fot_314-22125_B	64	5 of 9	0.41	0.82	
h50_0559_fot_502-20519_B	36	4 of 9	0.41	0.81	
h50_0559_fot_502-20564_B	39	5 of 9	0.41	0.83	
h50_0559_fot_505-20828_B	36	4 of 9	0.41	0.76	
h50_0559_fot_503-20630_B	52	5 of 9	0.41	0.80	
h50_0534_fot_147-23061_B	57	5 of 9	0.41	0.85	
h50_0559_fot_326-10850_B	85	5 of 9	0.41	0.82	
h50_0559_fot_313-22074_B	73	5 of 9	0.41	0.84	
h50_0559_fot_505-20798_B	44	5 of 9	0.41	0.91	
h50_0559_fot_502-20563_B	36	4 of 9	0.41	0.73	
353 more photo(s)	---	---	---	---	

Statistic of 989416 back-projected adjusted points from the statistic file. The table list 36 of 389 photos with an EO beyond the thresholds. The project consist of 8762 of 17528 photos from this camera. The table contain differences between the matched image points and back-projected adjusted points. Photos with at least one of the following conditions are visible:

- * **# of points** : Number of points/photo < 30 [points]
- * **Distribution** : Number of image tiles with more than 3 points < 6 [image tiles]
- * **RMS Ds [pixel]** : RMS difference in pixel > 0.8 [pixel]

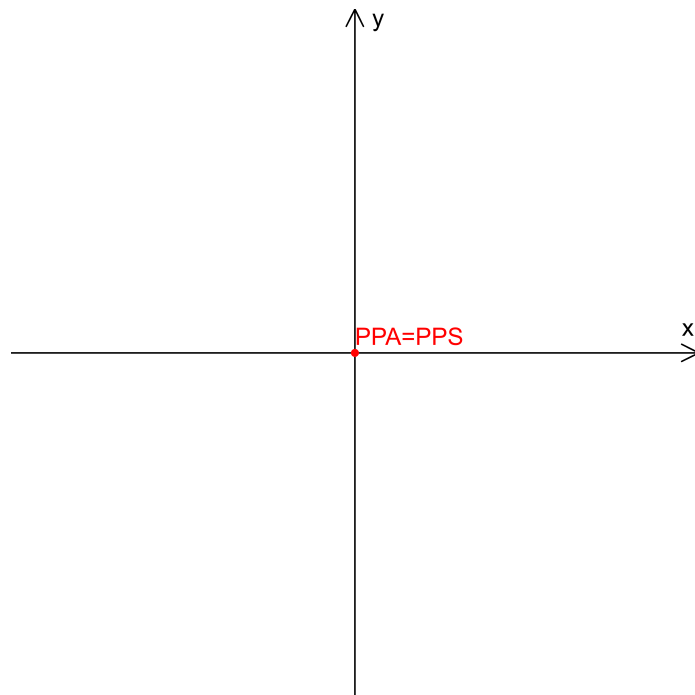
Camera 1

Camera data (Custom_front)

Data source	Madrid2025_FB.sta		
Sensor type	CCD sensor		
Manufacturer	Custom		
Model	Custom		
Serial number	not defined		
Camera UUID	not defined		
Sensor (width / height) [pixel]	14144	10560	
Pixel size (x / y) [micron]	3.7600	3.7600	
Ground sampling distance (x / y) [m]	0.0567	0.0567	
Calibration process	OFF		
Calibration status	Initial		
Calibration direction	INPHO (from ideal to measured)		
Distortion type	Undefined		
Additional parameters	OFF		
Focal length [mm / pixel]	123.3800	32813.8298	
Focal length (Fx / Fy) [pixel]	32813.8298	32813.8298	
Principal point (x / y) [mm pixel]	0.0000 7071.5000	0.0000 5279.5000	

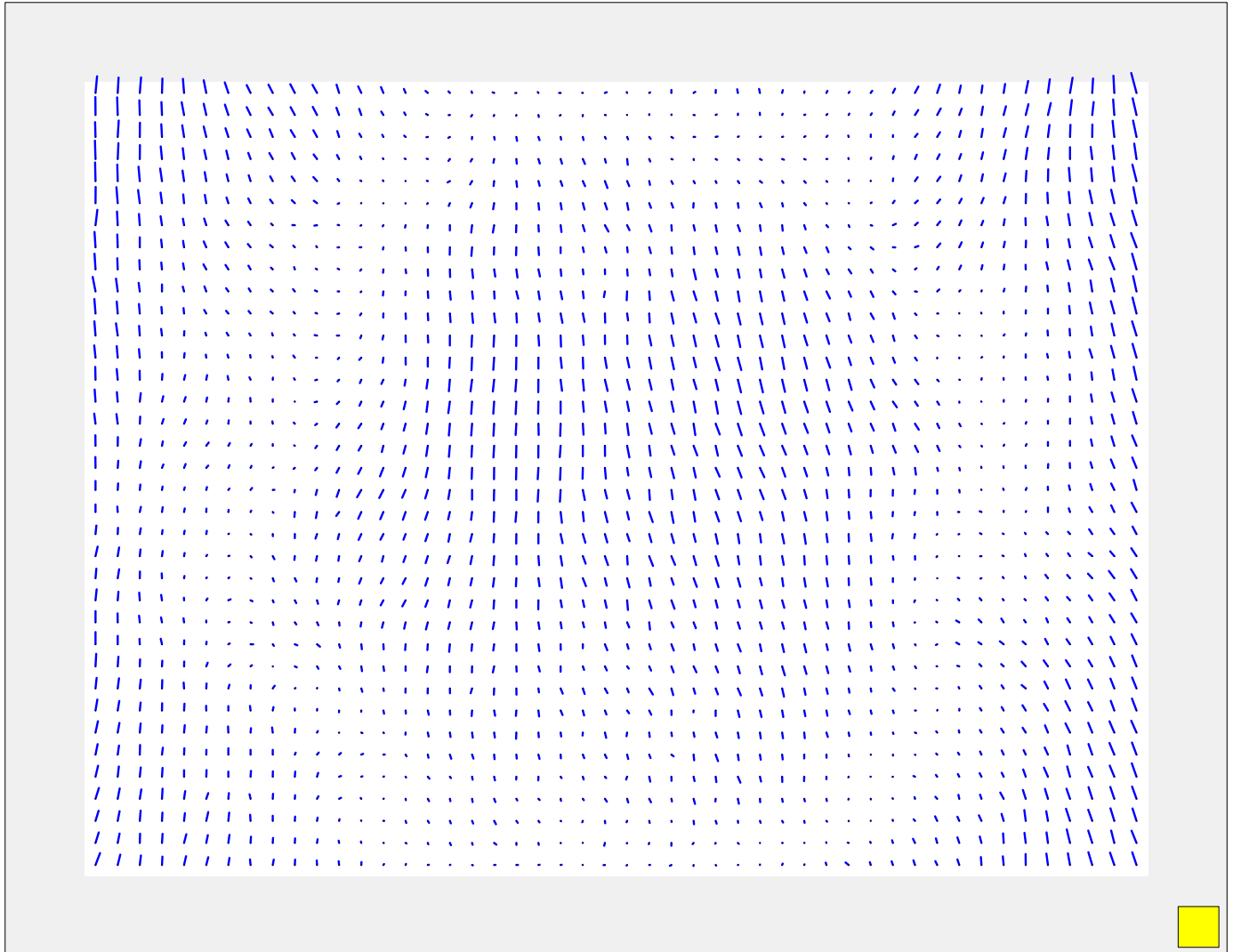
Platform data (Custom_front)

	X [m]	Y [m]	Z [m]
GNSS antenna offset	0.000000	0.000000	0.000000
	Omega (X) [deg]	Phi (Y) [deg]	Kappa (Z) [deg]
IMU boresight alignment	0.000000	0.000000	0.000000
Camera mount rotation	---		

Camera data (Custom_front)

Principle point ($x=0.0000$, $y=0.0000$ [mm]) in the image.

Image residuals (Custom_front)



Graphic of 1088359 back-projected adjusted points from the statistic file. Average image residual matrix vectors (min=0.002, avg=0.152, max=0.507 [pixel]) for image matrix elements. An image matrix element is defined with about (300 x 300) pixels. Image residual is defined as: residual = observed - adjusted. Number of invalid image residual vectors outside the graphic: 0.

-  : Scale for the residual vectors. Symbol in the graphic is correlated to 1 [pixel] in the image.
-  : Average image residual vector for points in (0-2) images.
-  : Average image residual vector for points in (3-4) images.
-  : Average image residual vector for points in (5-10) images.
-  : Average image residual vector for points in (>10) images.

Exterior orientation evaluation (Custom_front)

ImageID	# of points	Distribution	RMS Ds [pixel]	Max Ds [pixel]	Remark
h50_0560_fot_508-20694_F	31	4 of 9	0.48	0.84	
h50_0559_fot_323-11133_F	78	5 of 9	0.45	0.92	
h50_0582_fot_332-10331_F	41	5 of 9	0.45	0.79	
h50_0560_fot_508-20701_F	50	3 of 9	0.44	0.76	
h50_0582_fot_332-10321_F	51	5 of 9	0.43	0.80	
h50_0582_fot_332-10330_F	43	5 of 9	0.43	0.76	
h50_0560_fot_508-20696_F	39	4 of 9	0.42	0.78	
h50_0560_fot_508-20695_F	41	5 of 9	0.42	0.78	
h50_0559_fot_504-20684_F	31	4 of 9	0.42	0.71	
h50_0582_fot_404-13897_F	44	4 of 9	0.42	0.76	
h50_0582_fot_404-13893_F	23	2 of 9	0.41	0.67	
h50_0559_fot_330-10504_F	40	5 of 9	0.41	1.12	
h50_0582_fot_404-13894_F	33	3 of 9	0.41	0.70	
h50_0559_fot_322-22739_F	55	4 of 9	0.41	0.88	
h50_0559_fot_501-20463_F	64	5 of 9	0.41	0.71	
h50_0559_fot_503-20629_F	47	4 of 9	0.40	0.82	
h50_0534_fot_145-23333_F	101	5 of 9	0.40	0.87	
h50_0534_fot_302-21209_F	54	5 of 9	0.40	0.73	
h50_0559_fot_322-22719_F	94	5 of 9	0.40	0.84	
h50_0559_fot_330-10492_F	72	4 of 9	0.40	0.82	
h50_0559_fot_402-13631_F	90	5 of 9	0.40	0.69	
h50_0582_fot_404-13895_F	40	3 of 9	0.39	0.79	
h50_0559_fot_311-21844_F	79	4 of 9	0.39	0.75	
h50_0559_fot_504-20680_F	57	5 of 9	0.39	0.76	
h50_0559_fot_316-22269_F	70	5 of 9	0.39	0.82	
h50_0560_fot_508-20693_F	46	5 of 9	0.38	0.79	
h50_0582_fot_332-10333_F	21	3 of 9	0.38	0.69	
h50_0560_fot_508-20704_F	35	4 of 9	0.38	0.77	
h50_0559_fot_316-22268_F	81	5 of 9	0.38	0.79	
h50_0559_fot_319-22535_F	81	5 of 9	0.38	0.71	
h50_0559_fot_503-20626_F	56	5 of 9	0.38	0.73	
h50_0559_fot_329-10550_F	82	5 of 9	0.37	0.84	
h50_0559_fot_322-22741_F	90	5 of 9	0.37	0.81	
h50_0560_fot_508-20697_F	30	4 of 9	0.37	0.72	
h50_0559_fot_330-10502_F	57	5 of 9	0.37	0.68	
h50_0582_fot_402-13610_F	39	4 of 9	0.37	0.75	
187 more photo(s)	---	---	---	---	

Statistic of 2077775 back-projected adjusted points from the statistic file. The table list 36 of 223 photos with an EO beyond the thresholds. The project consist of 8763 of 17528 photos from this camera. The table contain differences between the matched image points and back-projected adjusted points. Photos with at least one of the following conditions are visible:

- * **# of points** : Number of points/photo < 30 [points]
- * **Distribution** : Number of image tiles with more than 3 points < 6 [image tiles]
- * **RMS Ds [pixel]** : RMS difference in pixel > 0.8 [pixel]

Exterior orientation evaluation summary

Legend of histogram for number of tie points

X : Range for the number of tie points/photo.
Y : Number of images for the defined range (X).
Thr : Empirical threshold (30 points/photo) for the definition of weaker images.

Legend of histogram for distribution of tie points

X : Number of sufficient occupied image tiles with tie points. The image is divided into 9 equal image tiles.
Y : Number of images for the defined image tile occupation (X).
Thr : Empirical threshold (6 image tiles) for the definition of weaker images.

Legend of histogram for RMS values of tie points

X : Range for the RMS value.
Y : Number of images for the defined range (X).
RMS : RMS value for differences between the matched image points and back-projected adjusted points.
Thr : Statistical threshold ($0.85 [\text{pixel}] = 3 \times \text{sigma}$ naught from the block adjustment) for the definition of weaker images.

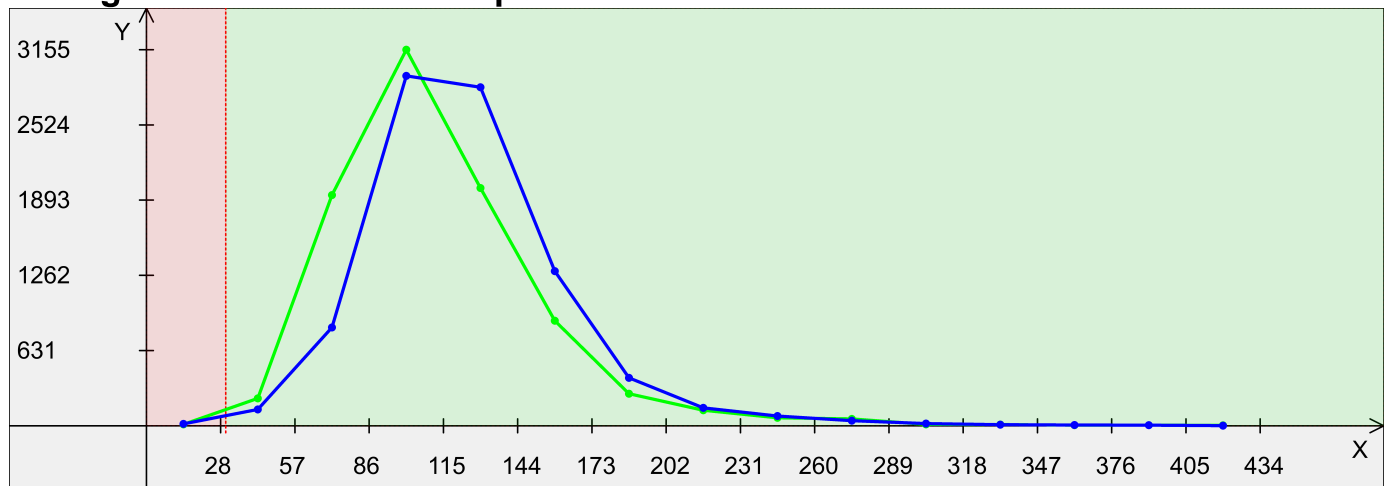
Statistical information about used elements for EO evaluation

Data base	: Statistic file (*.sta)
Number of photos	: 17525 of 17528
Number of camera(s)	: 2 of 2
Number of used image observations	: 2077775
Number of adjusted points	: 181475

Camera color assignment

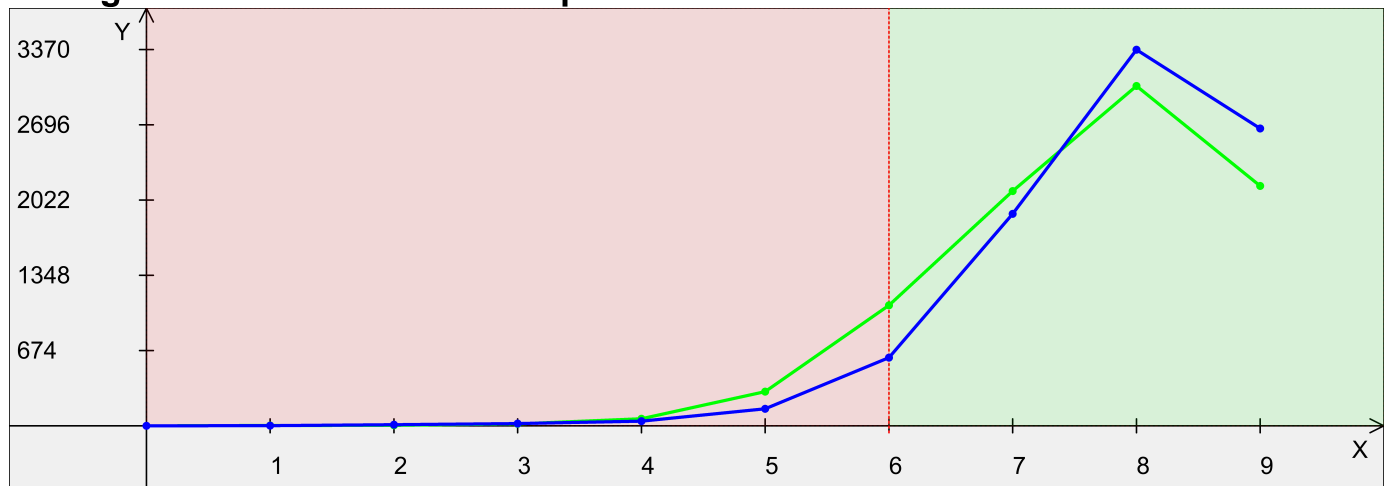
 : Threshold (Thr) for the actual evaluation criteria.
 : for Camera : Custom_back.
 : for Camera : Custom_front.
 : Range with acceptable photos.
 : Range with suspect photos.

Histogram for number of tie points



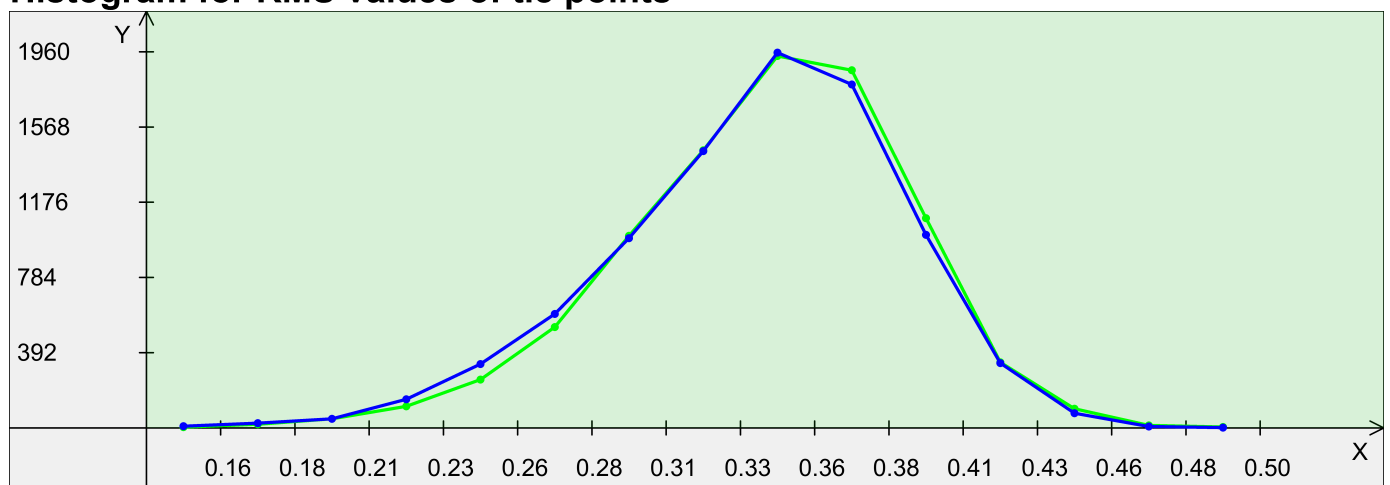
Graphic for 17525 photos with 2 camera(s). Evaluation criteria: [# of points/photo] < Thr (=30 [points/photo]).

Histogram for distribution of tie points



Graphic for 17525 photos with 2 camera(s). Evaluation criteria: [Distribution] < Thr (=6 [image tiles]).

Histogram for RMS values of tie points



Graphic for 17525 photos with 2 camera(s). Evaluation criteria: [RMS] > Thr (=0.85 [pixel]).

Block adjustment settings

Block Parameters

Image standard deviation:	X [mm]	Y [mm]	
automatic	0.002000	0.002000	
manual	0.002000	0.002000	
Object standard deviation:	X [m]	Y [m]	Z [m]
control points	0.030000	0.030000	0.045000
Earth curvature correction	OFF		
Refraction correction	OFF		

GNSS Parameters

Mode	ON		
Shift/Drift	OFF		
	X [m]	Y [m]	Z [m]
Shift	ON	ON	ON
Drift	OFF	OFF	OFF
Standard deviation	0.100000	0.100000	0.100000

IMU Parameters

Mode	ON		
Shift/Drift	OFF		
Boresight alignment	OFF		
	Omega (X) [deg]	Phi (Y) [deg]	Kappa (Z) [deg]
Shift	---	---	---
Drift	OFF	OFF	OFF
Standard deviation	0.008000	0.008000	0.008000

Block adjustment results

Accuracy

Sigma naught	1.0639 [micron]
	0.2830 [pixel]

Mean standard deviation of translations

X [m]	Y [m]	Z [m]	Total [m]
0.0202	0.0277	0.0287	0.0447

Mean standard deviation of rotations

Omega [deg]	Phi [deg]	Kappa [deg]
0.00101518	0.00097716	0.00072581

Mean standard deviation of terrain points

X [m]	Y [m]	Z [m]	Total [m]
0.0448	0.0185	0.0491	0.0690

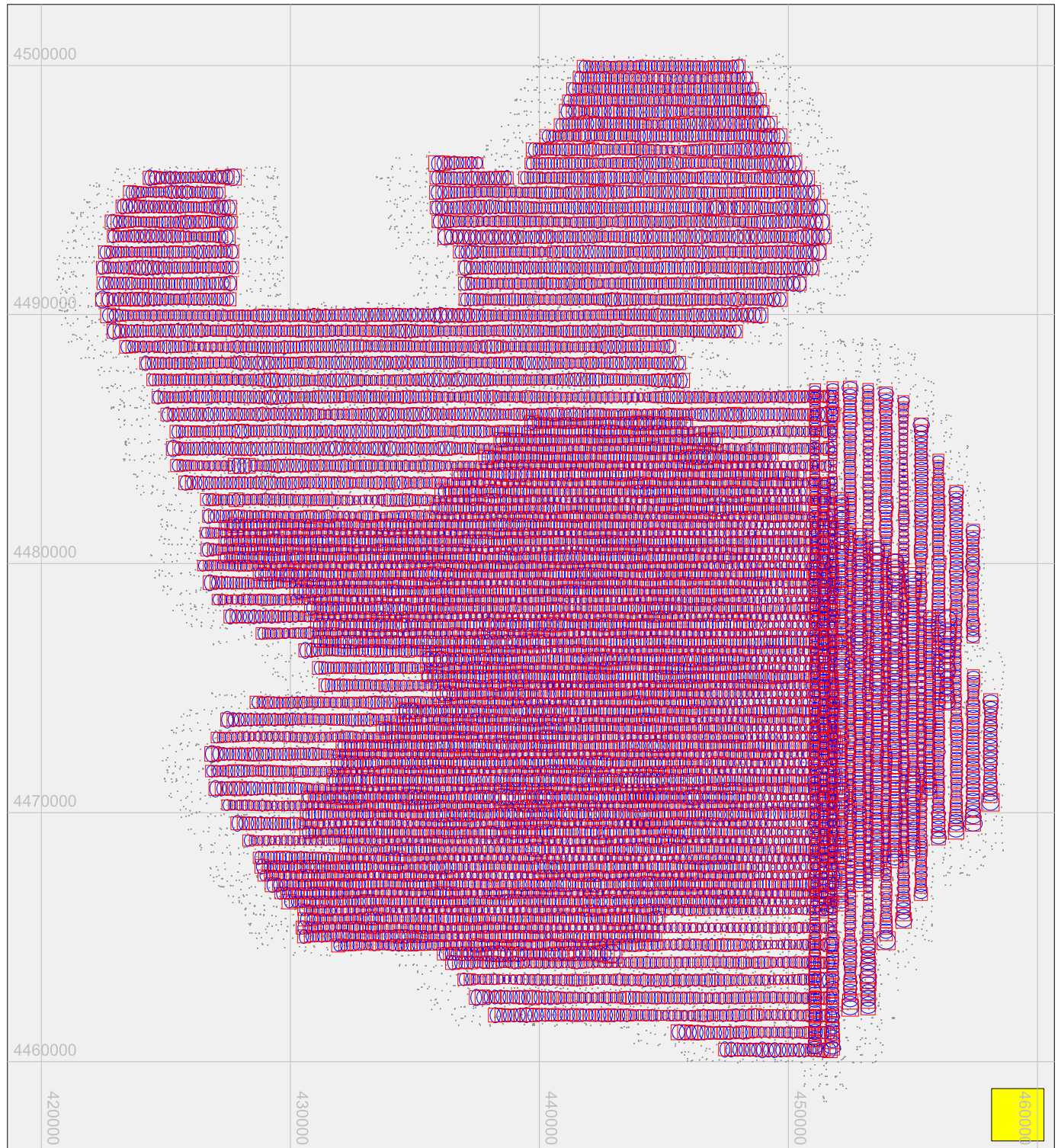
RMS values for GNSS

X [m]	Y [m]	Z [m]	Total [m]
0.2184	0.1250	0.1052	0.2728

RMS values for IMU

Omega (X) [deg]	Phi (Y) [deg]	Kappa (Z) [deg]	Total [deg]
0.00639829	0.00491391	0.00688915	0.01060873

Exterior orientation (X,Y,Z) standard deviations (Custom_back)



Graphic with 8762 photos from the project. The camera locations are shown with its standard deviations for XYZ. The area has a planimetric extent of about: 42046 x 46056 [m].

- : Scale for the symbols. Symbol in the graphic is correlated to 0.142 [m] in the object.
- : Standard deviation XY for 8762 projection centers (min=0.0169, avg=0.0356, max=0.0679 [m]).
- : Standard deviation Z for 8762 projection centers (min=0.0169, avg=0.0292, max=0.0520 [m]).
- : Tie point location for 181475 points.

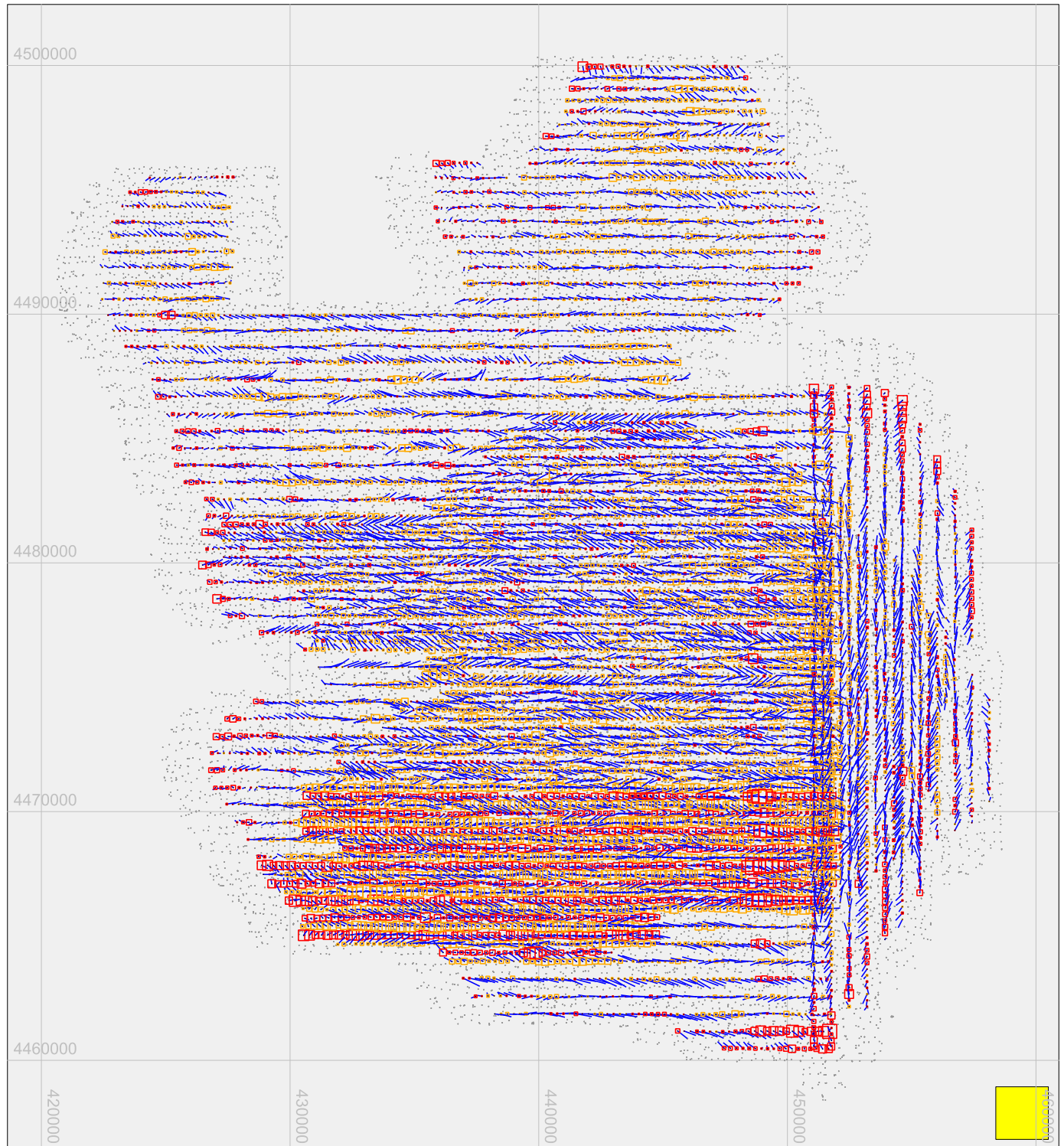
Exterior orientation (Omega,Phi,Kappa) standard deviations (Custom_back)



Graphic with 8762 photos from the project. The camera locations are shown with its standard deviations for omega,phi,kappa. The area has a planimetric extent of about: 42046 x 46056 [m].

- : Scale for the symbols. Symbol in the graphic is correlated to 0.00466 [deg] in the object.
- : Standard deviation omega(X) for 8762 projection centers (min=0.00047, avg=0.00104, max=0.00246 [deg]).
- : Standard deviation phi(Y) for 8762 projection centers (min=0.00050, avg=0.00100, max=0.00192 [deg]).
- : Standard deviation kappa(Z) for 8762 projection centers (min=0.00024, avg=0.00075, max=0.00360 [deg]).
- : Tie point location for 181475 points.

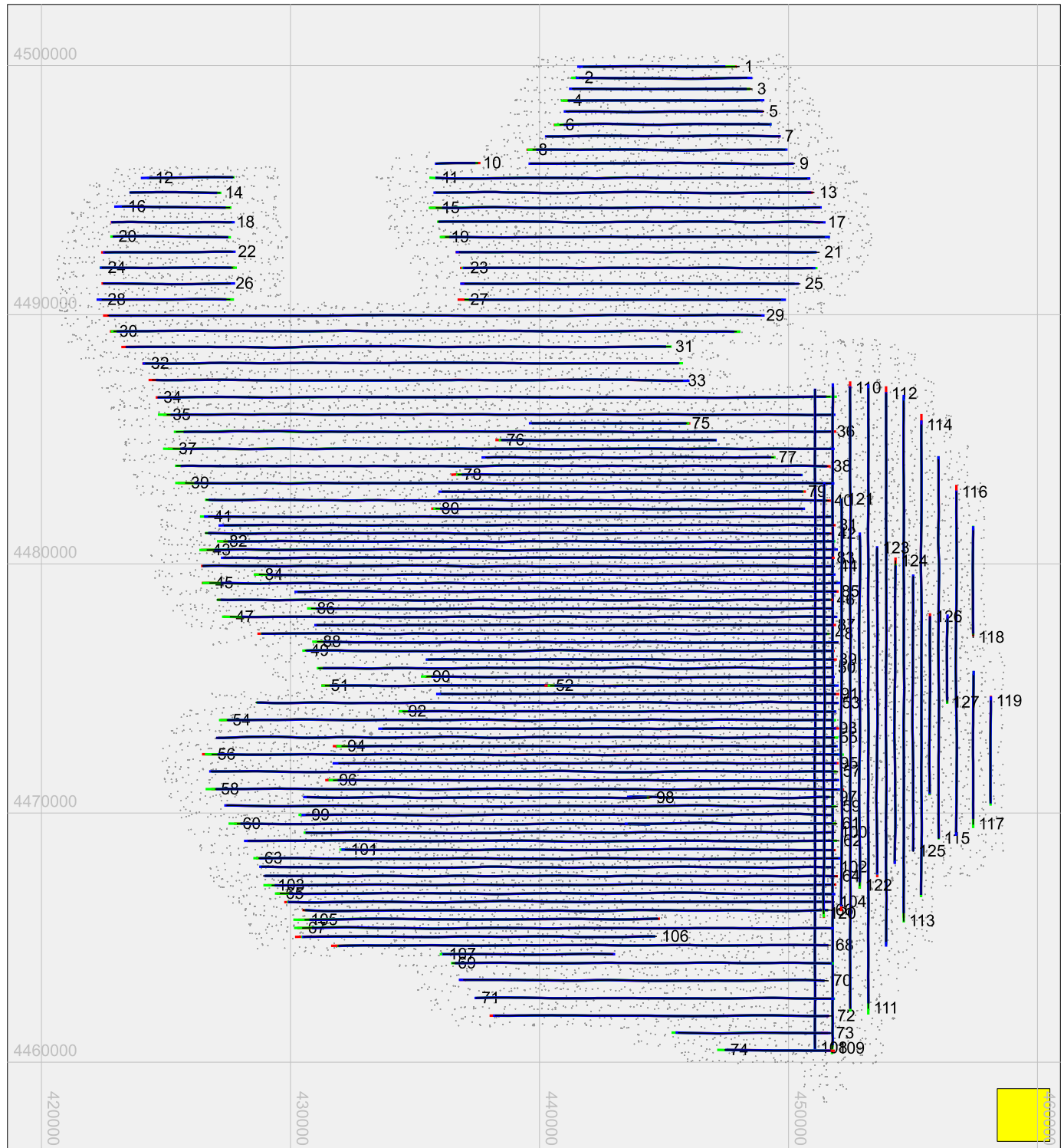
GNSS residuals (observed - adjusted) (Custom_back)



Graphic with 8762 used GNSS locations from the adjustment. The points are shown with its residuals for X,Y,Z from the adjustment. The area has a planimetric extent of about: 42046 x 46056 [m]. Residual is defined as: residual = observed - adjusted.

- : Scale for the symbols. Symbol in the graphic is correlated to 1.364 [m] in the object.
- : Residual XY for (8762) GNSS positions (min=0.0129, avg=0.3026, max=0.6450 [m]).
- : Residual Z for (pos.:2839/neg.:5923) GNSS positions (min=-0.3716, avg=0.0806, max=0.4138 [m]).
- : Number of eliminated GNSS observations: 0 of 8762
- : Tie point location for 181475 points.

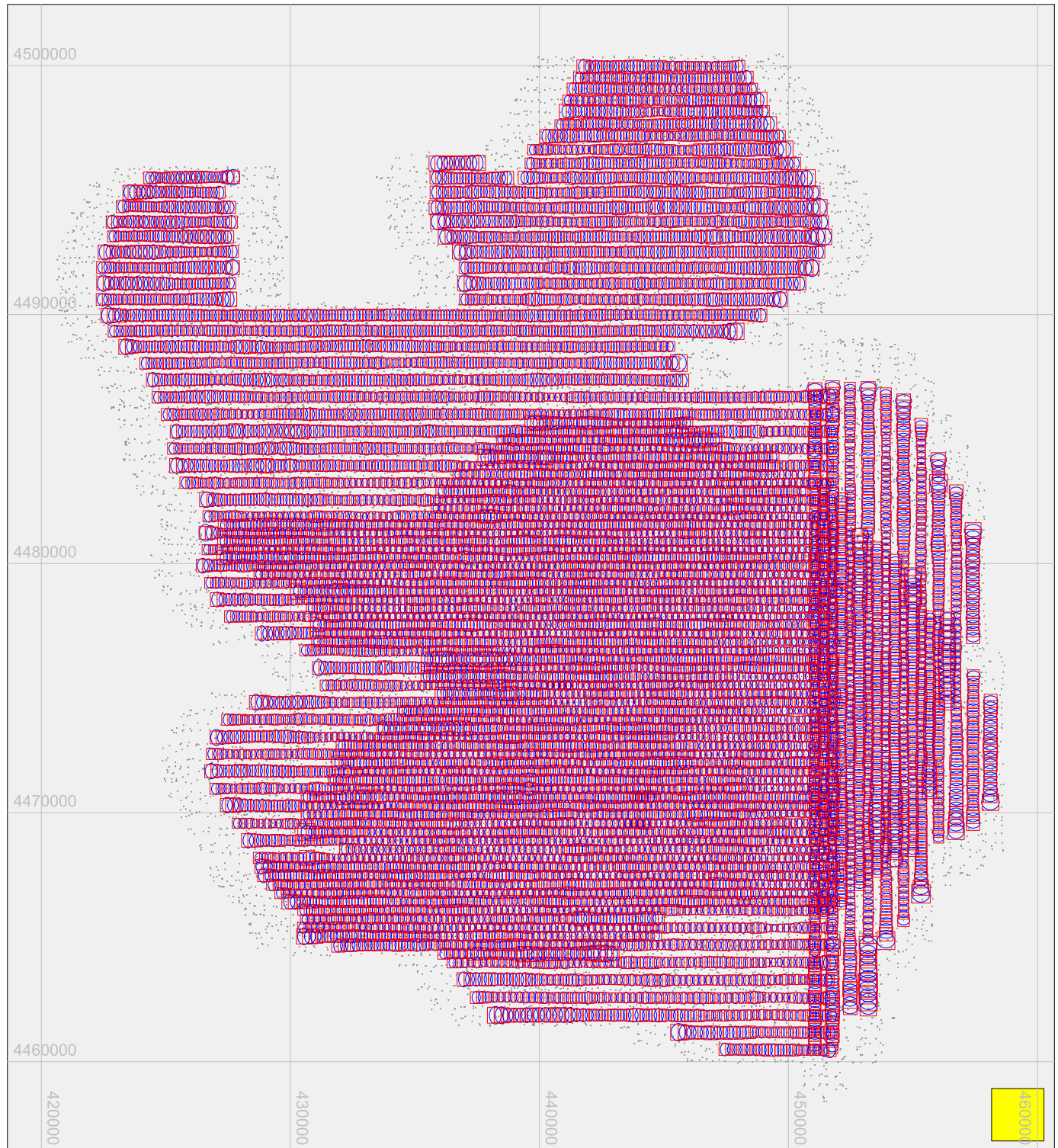
IMU residuals (observed - adjusted) (Custom_back)



Graphic with 8762 IMU locations from the adjustment. The points are shown with its residuals for omega,phi,kappa from the adjustment. The area has a planimetric extent of about: 42046 x 46056 [m]. Residual is defined as: residual = observed - adjusted.

- : Scale for the symbols. Symbol in the graphic is correlated to 0.10609 [deg] in the object.
- : Residual omega(X) for (8762) IMU positions (min=-0.01690, avg=0.00158, max=0.02358 [deg]).
- : Residual phi(Y) for (8762) IMU positions (min=-0.02372, avg=0.00011, max=0.02159 [deg]).
- : Residual kappa(Z) for (8762) IMU positions (min=-0.02984, avg=-0.00299, max=0.02527 [deg]).
- : Tie point location for 181475 points.

Exterior orientation (X,Y,Z) standard deviations (Custom_front)



Graphic with 8763 photos from the project. The camera locations are shown with its standard deviations for XYZ. The area has a planimetric extent of about: 42046 x 46056 [m].

- : Scale for the symbols. Symbol in the graphic is correlated to 0.142 [m] in the object.
- : Standard deviation XY for 8763 projection centers (min=0.0189, avg=0.0338, max=0.0670 [m]).
- : Standard deviation Z for 8763 projection centers (min=0.0171, avg=0.0281, max=0.0514 [m]).
- : Tie point location for 181475 points.

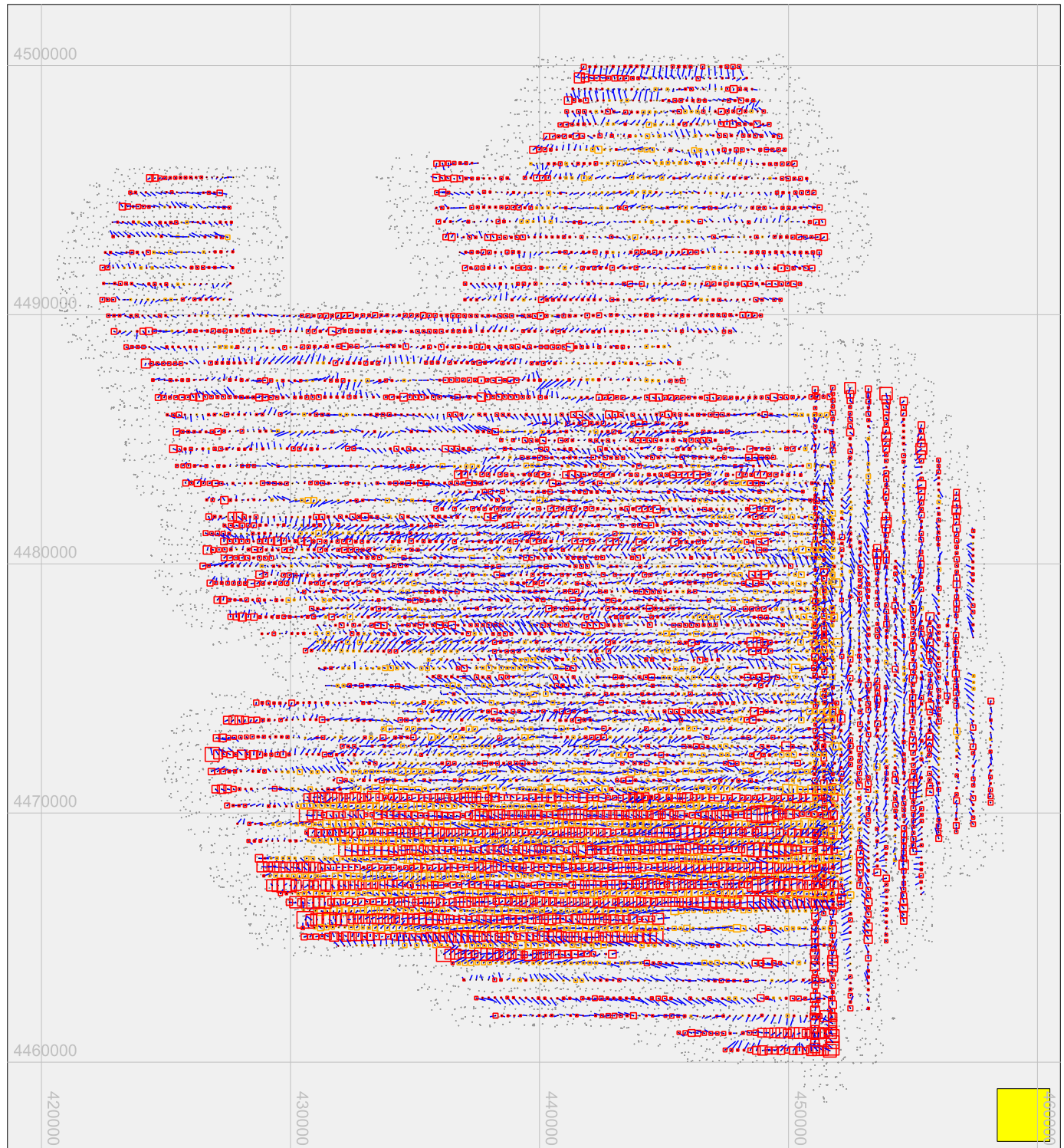
Exterior orientation (Omega,Phi,Kappa) standard deviations (Custom_front)



Graphic with 8763 photos from the project. The camera locations are shown with its standard deviations for omega,phi,kappa. The area has a planimetric extent of about: 42046 x 46056 [m].

- : Scale for the symbols. Symbol in the graphic is correlated to 0.00440 [deg] in the object.
- : Standard deviation omega(X) for 8763 projection centers (min=0.00047, avg=0.00099, max=0.00259 [deg]).
- : Standard deviation phi(Y) for 8763 projection centers (min=0.00050, avg=0.00095, max=0.00202 [deg]).
- : Standard deviation kappa(Z) for 8763 projection centers (min=0.00023, avg=0.00070, max=0.00335 [deg]).
- : Tie point location for 181475 points.

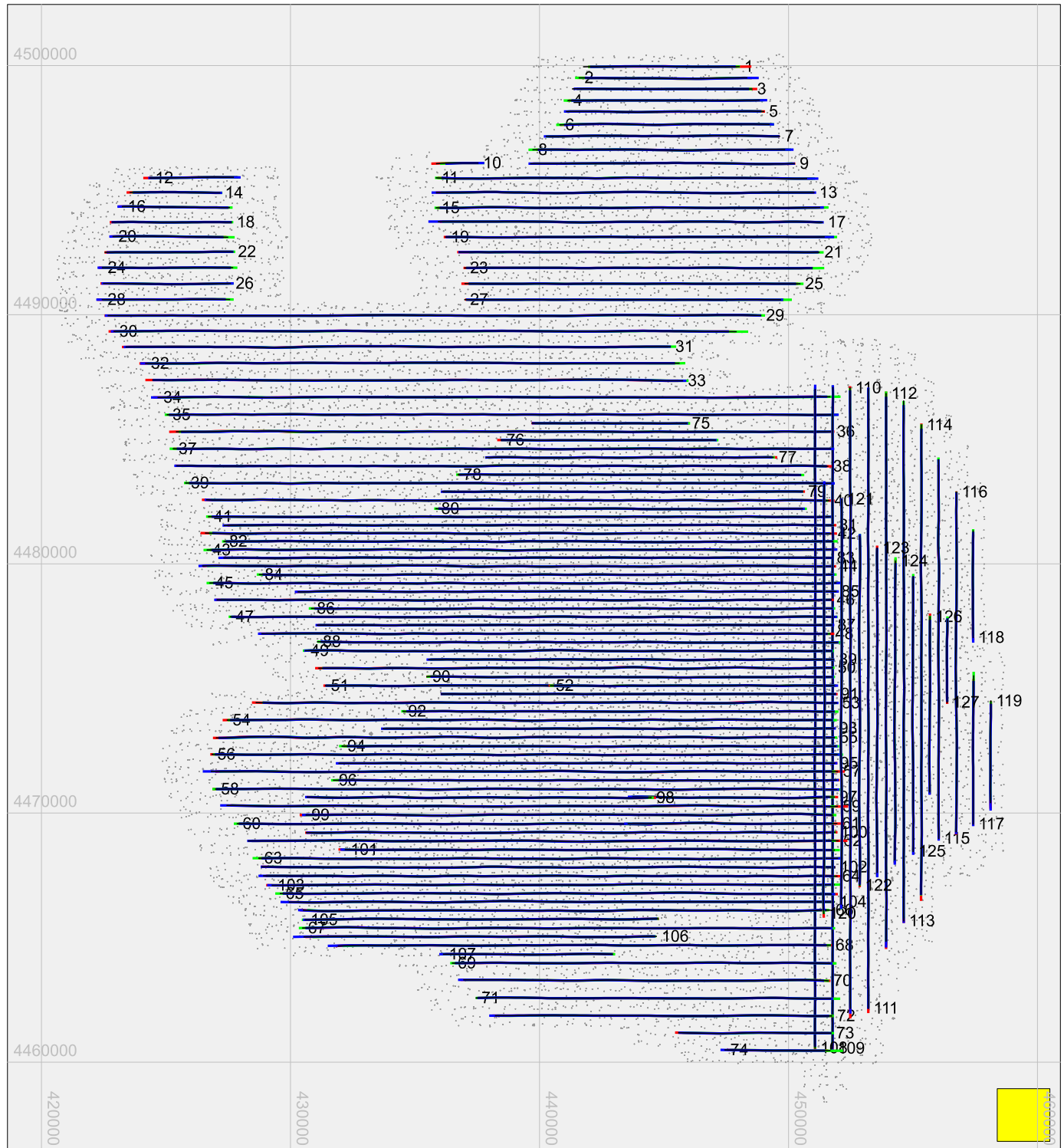
GNSS residuals (observed - adjusted) (Custom_front)



Graphic with 8763 used GNSS locations from the adjustment. The points are shown with its residuals for X,Y,Z from the adjustment. The area has a planimetric extent of about: 42046 x 46056 [m]. Residual is defined as: residual = observed - adjusted.

- : Scale for the symbols. Symbol in the graphic is correlated to 1.364 [m] in the object.
- : Residual XY for (8763) GNSS positions (min=0.0033, avg=0.1486, max=0.4833 [m]).
- : Residual Z for (pos.:5580/neg.:3183) GNSS positions (min=-0.3370, avg=0.0803, max=0.4333 [m]).
- : Number of eliminated GNSS observations: 0 of 8763
- : Tie point location for 181475 points.

IMU residuals (observed - adjusted) (Custom_front)



Graphic with 8763 IMU locations from the adjustment. The points are shown with its residuals for omega,phi,kappa from the adjustment. The area has a planimetric extent of about: 42046 x 46056 [m]. Residual is defined as: residual = observed - adjusted.

- : Scale for the symbols. Symbol in the graphic is correlated to 0.10609 [deg] in the object.
- : Residual omega(X) for (8763) IMU positions (min=-0.02046, avg=-0.00058, max=0.02586 [deg]).
- : Residual phi(Y) for (8763) IMU positions (min=-0.02558, avg=-0.00020, max=0.02301 [deg]).
- : Residual kappa(Z) for (8763) IMU positions (min=-0.02291, avg=-0.00244, max=0.02672 [deg]).
- : Tie point location for 181475 points.

Ground control points

Ground control points from statistic file

ID	Type	X	Y	Z	Unit	Remark
PA1003	Full	428254.6900	4477344.9770	713.8480	m	
PA1007	Full	431700.9900	4474869.3730	696.5530	m	
PA1009	Vertical			713.9180	m	
PA1011	Full	427729.9790	4473476.2760	710.0290	m	
PA1013	Full	430018.1670	4465939.8580	714.1930	m	
PA1015	Full	433409.2680	4465354.5270	678.6370	m	
PA1017	Full	436032.7700	4465182.3830	638.8820	m	
PA1018	Full	436041.6240	4465182.5810	638.6160	m	
PA1023	Full	445612.8540	4460764.7620	560.7010	m	
PA1027	Full	453182.0110	4463691.2980	539.3530	m	
PA1031	Full	450098.2250	4466329.4940	626.2170	m	
PA1033	Full	450375.4520	4468741.8360	648.8050	m	
PA1034	Full	450379.6100	4468749.7060	648.6660	m	
PA1035	Full	455056.9300	4466400.5070	594.9900	m	
PA1036	Full	455068.5880	4466418.0480	596.3110	m	
PA1037	Full	455970.8210	4468161.4220	642.9910	m	
PA1042	Full	458143.1610	4471127.8880	553.7170	m	
PA1043	Full	457865.7240	4474841.5350	561.2060	m	
PA1045	Full	457238.6960	4479464.4060	598.8840	m	
PA1050	Full	455966.2520	4482102.0820	668.8740	m	
PA1051	Full	456199.8670	4484667.7240	711.9650	m	
PA1057	Full	448739.5800	4489569.4180	636.0170	m	
PA1059	Full	445248.0740	4489778.7810	687.0410	m	
PA1066	Full	440745.0710	4478232.4560	700.9110	m	
PA107	Full	453822.2580	4486633.9740	590.1760	m	
PA147	Full	432707.7900	4485869.9790	681.8830	m	
PA148	Full	432738.7600	4485862.8300	682.1500	m	
PA158	Full	445952.7310	4488407.9690	676.9220	m	
PA194	Full	432208.1150	4474289.6850	701.0360	m	
PA196	Full	431900.8250	4475029.8010	691.7510	m	
PA2001	Full	424296.7830	4495961.2060	933.7970	m	
PA2001_BIS	Full	424299.6010	4495978.2260	938.6500	m	
PA2001_BIS2	Full	424293.5850	4495973.9610	937.0120	m	
PA2003	Full	427729.4360	4495828.1890	878.0720	m	
PA2003_BIS	Full	427729.1830	4495826.6310	878.1230	m	
PA2003_BIS2	Full	427751.4610	4495832.3880	877.1400	m	
PA2004	Full	423761.2350	4495527.6620	933.9180	m	
PA2004_BIS	Full	423769.2100	4495555.4560	934.0580	m	

Ground control points from statistic file

ID	Type	X	Y	Z	Unit	Remark
PA2016	Full	422659.3130	4492771.6140	860.9600	m	
PA2016_BIS	Full	422643.6070	4492778.4530	862.4170	m	
PA2033	Full	441962.9260	4500565.9870	748.7280	m	
PA2039	Full	448109.4600	4500286.0330	635.5270	m	
PA2039_BIS	Full	448058.9640	4500221.3560	641.6810	m	
PA2043	Full	437332.0590	4496866.8120	683.7310	m	
PA2043_BIS	Full	437294.2560	4496946.0790	682.3640	m	
PA2051	Full	439600.5760	4496086.3790	718.0170	m	
PA2051_BIS	Full	439594.5000	4496104.4810	718.0110	m	
PA2060	Full	450787.7210	4495420.5950	605.3540	m	
PA2068	Full	451179.9010	4493499.0090	597.5890	m	
PA2087	Full	422974.9900	4489304.3970	742.0880	m	
PA2087_BIS	Full	422969.4440	4489288.4180	742.5360	m	
PA2099	Full	425733.3570	4483176.5950	704.6340	m	
PA2108	Full	430955.8700	4475829.1160	707.1780	m	
PA2115	Full	434312.3650	4464277.4090	671.5670	m	
PA2132	Full	436476.4260	4490677.2550	694.1110	m	
PA2132_BIS	Full	436466.3090	4490661.5390	694.5760	m	
PA409	Full	438190.2580	4462709.5570	627.7410	m	
PA416	Full	451895.8380	4460586.9640	643.9500	m	
PA417	Full	452041.5360	4460588.5390	647.2900	m	
Minimum		422643.6070	4460586.9640	539.3530	m	selected system
Maximum		458143.1610	4500565.9870	938.6500	m	selected system
Area extent		35499.5540	39979.0230	399.2970	m	selected system

List of 59 ground control points defined in the statistic file. Statistics defined in the selected coordinate system.

Ground control points

Ground control point residuals (given - adjusted)

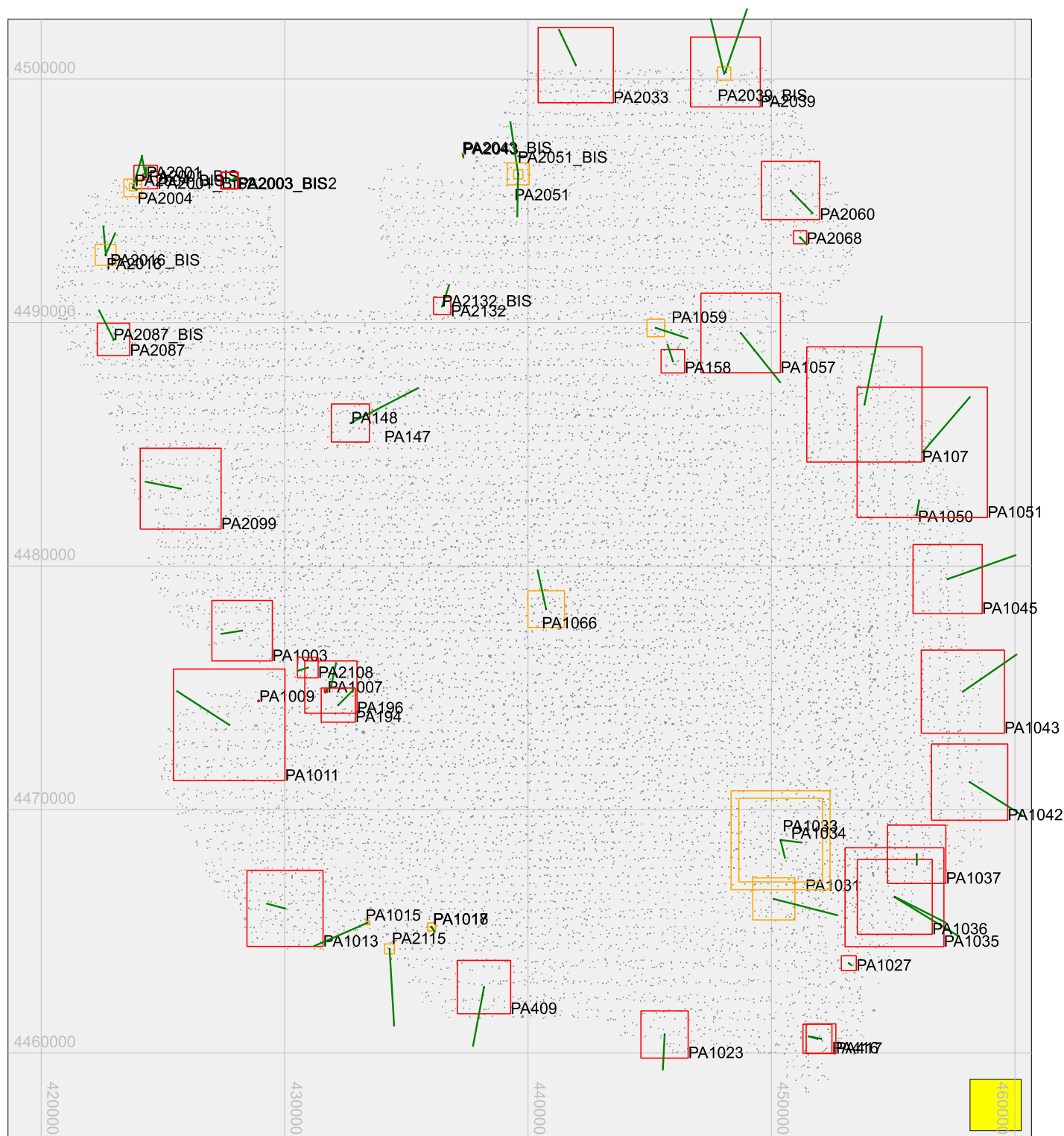
ID	#	X [m]	Y [m]	Z [m]	Total [m]	Remark
PA1003	9	-0.0487	-0.0075	0.1435	0.1517	
PA1007	15	0.0028	0.0040	0.0076	0.0090	
PA1009	5			0.0037	0.0037	
PA1011	10	-0.1238	0.0797	0.2648	0.3029	
PA1013	19	-0.0426	0.0112	0.1807	0.1860	
PA1015	31	-0.1267	-0.0553	-0.0097	0.1386	
PA1017	37	0.0071	-0.0109	-0.0187	0.0228	
PA1018	38	0.0071	-0.0112	-0.0188	0.0229	
PA1023	9	-0.0042	-0.0829	0.1122	0.1396	
PA1027	16	0.0051	-0.0045	0.0356	0.0362	
PA1031	20	0.1497	-0.0383	-0.0999	0.1840	
PA1033	21	0.0102	-0.0414	-0.2351	0.2389	
PA1034	21	0.0497	-0.0059	-0.1985	0.2047	
PA1035	13	0.1522	-0.0924	0.2348	0.2947	
PA1036	13	0.1199	-0.0607	0.1779	0.2229	
PA1037	6	0.0002	-0.0248	0.1385	0.1407	
PA1042	5	0.1239	-0.0783	0.1810	0.2329	
PA1043	12	0.1270	0.0879	0.1972	0.2505	
PA1045	18	0.1610	0.0565	0.1642	0.2369	
PA1050	10	0.0059	0.0340	0.0033	0.0347	
PA1051	8	0.1127	0.1307	0.3094	0.3543	
PA1057	10	0.0933	-0.1166	0.1890	0.2409	
PA1059	20	0.0753	-0.0246	-0.0417	0.0895	
PA1066	20	-0.0201	0.0918	-0.0871	0.1281	
PA107	13	0.0411	0.2086	0.2734	0.3464	
PA147	14	0.1603	0.0828	0.0905	0.2019	
PA148	15	-0.0000	0.0000	-0.0001	0.0002	
PA158	10	-0.0128	0.0396	0.0559	0.0697	
PA194	17	0.0352	0.0356	0.0810	0.0952	
PA196	8	0.0123	0.0572	0.1240	0.1371	
PA2001	4	-0.0003	0.0026	0.0026	0.0037	
PA2001_BIS	3	-0.0001	0.0223	0.0145	0.0266	
PA2001_BIS2	4	-0.0094	0.0503	0.0559	0.0758	
PA2003	5	0.0171	0.0048	0.0398	0.0436	
PA2003_BIS	5	0.0167	0.0046	0.0397	0.0433	
PA2003_BIS2	5	0.0166	0.0047	0.0397	0.0432	
PA2004	5	0.0223	0.0754	-0.0423	0.0893	
PA2004_BIS	5	0.0093	-0.0059	-0.0170	0.0202	

Ground control point residuals (given - adjusted)

ID	#	X [m]	Y [m]	Z [m]	Total [m]	Remark
PA2016	10	-0.0062	0.0679	0.0025	0.0682	
PA2016_BIS	10	0.0228	0.0509	-0.0498	0.0748	
PA2033	2	-0.0394	0.0834	0.1787	0.2011	
PA2039	5	0.0510	0.1483	0.1657	0.2281	
PA2039_BIS	5	-0.0314	0.1292	-0.0312	0.1366	
PA2043	1	0.0007	-0.0054	-0.0038	0.0066	
PA2043_BIS	1	0.0001	-0.0001	-0.0004	0.0005	
PA2051	12	-0.0189	0.1238	-0.0219	0.1272	
PA2051_BIS	11	-0.0019	-0.1010	-0.0523	0.1138	
PA2060	11	0.0521	-0.0537	0.1385	0.1575	
PA2068	10	0.0159	-0.0170	0.0309	0.0387	
PA2087	6	-0.0340	0.0684	0.0771	0.1085	
PA2087_BIS	7	0.0009	0.0008	-0.0016	0.0020	
PA2099	5	-0.0830	0.0163	0.1920	0.2098	
PA2108	5	-0.0243	-0.0077	0.0491	0.0553	
PA2115	15	0.0109	-0.1816	-0.0235	0.1834	
PA2132	8	0.0161	0.0496	0.0410	0.0663	
PA2132_BIS	7	0.0003	0.0001	0.0004	0.0005	
PA409	7	-0.0260	-0.1393	0.1268	0.1901	
PA416	15	-0.0210	0.0055	0.0690	0.0723	
PA417	16	-0.0252	0.0050	0.0705	0.0751	
Maximum		0.1610	0.2086	0.3094		
Mean		0.0173	0.0115	0.0568		
Sigma		0.0616	0.0713	0.1079		
RMSE(x,y,z)		0.0634	0.0716	0.1211		
RMSEr		0.0957	SQRT(RMSE _x * RMSE _x + RMSE _y * RMSE _y)			
ACCr (at 95% Confidence Level)		0.1656	RMSEr * 1.7308			
ACCz (at 95% Confidence Level)		0.2374	RMSEz * 1.9600			

List of 59 considered ground control points defined in the statistic file.

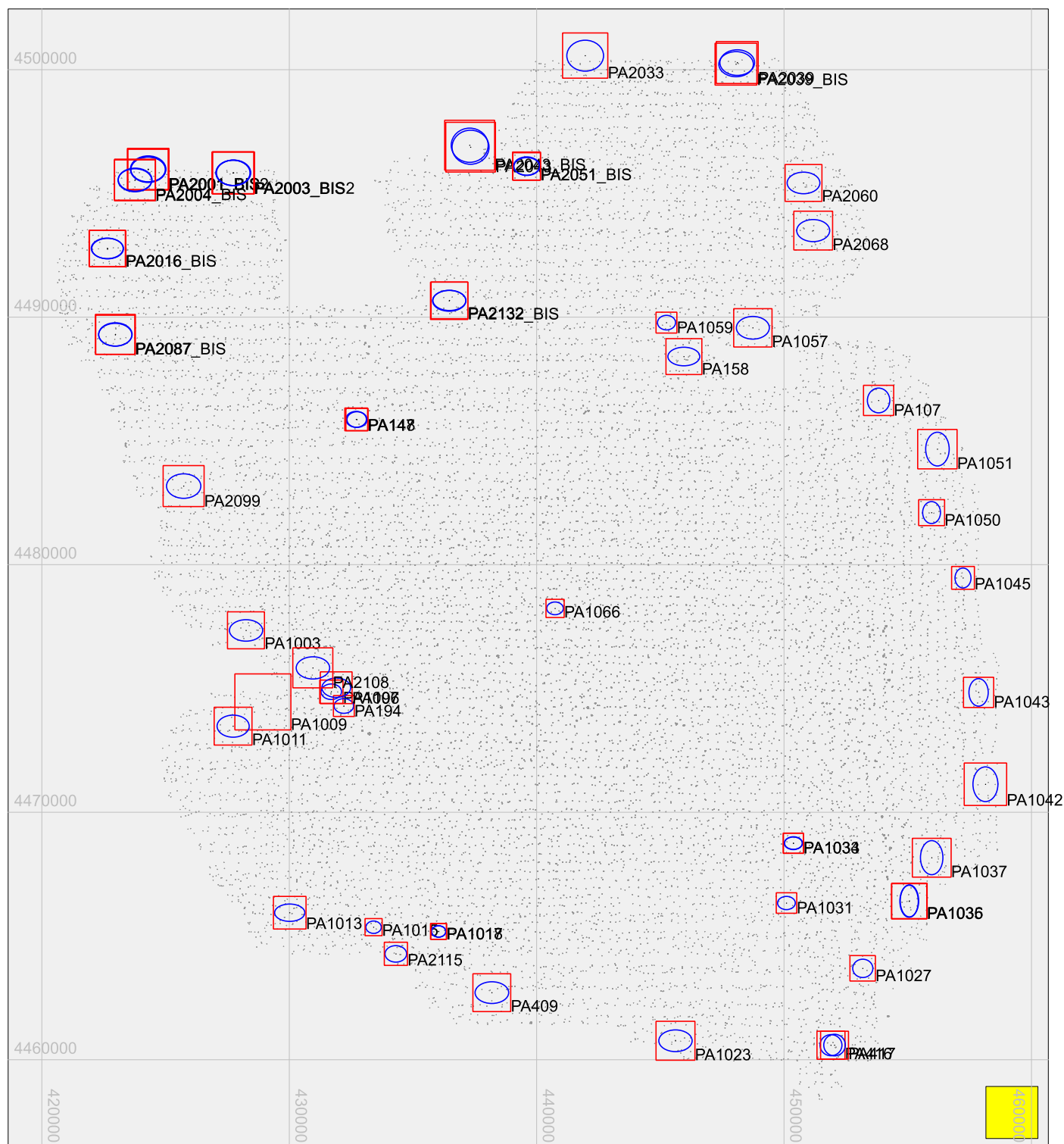
Ground control point residuals



Graphic with 59 ground control points from the project. The points are shown with its residuals for XYZ from the adjustment. The area has a planimetric extent of about: 42046 x 46056 [m]. Residual is defined as: residual = given - adjusted.

- : Scale for the symbols. Symbol in the graphic is correlated to 0.121 [m] in the object.
- : Residual XY (58) for ground control points (min=0.0000, avg=0.0740, max=0.2126 [m]).
- : Residual Z (pos.:40/neg.:19) for ground control points (min=-0.2351, avg=0.0568, max=0.3094 [m]).
- : Tie point location for 181475 points.

Ground control point standard deviations



Graphic with 59 ground control points from the project. The points are shown with its standard deviations for XYZ from the adjustment. The area has a planimetric extent of about: 42046 x 46056 [m].

- : Scale for the symbols. Symbol in the graphic is correlated to 0.021 [m] in the object.
- : Standard deviation XY for 58 ground control points (min=0.0075, avg=0.0144, max=0.0206 [m]).
- : Standard deviation Z for 59 ground control points (min=0.0065, avg=0.0138, max=0.0229 [m]).
- : Tie point location for 181475 points.